

1           1.     An exciter assembly for supplying power to a superconducting load disposed  
2     within a cryogenic region of a rotating machine, the exciter assembly comprising:

3                 a transformer having a primary winding and a secondary winding, one of the primary  
4     and secondary windings being positioned in a rotational reference frame relative to the other  
5     of the primary and secondary windings; and

6                 a rotatable enclosure including a wall having an intermediate core formed of a high  
7     permeability material, the intermediate core positioned between the primary winding of the  
8     transformer and the secondary winding of the transformer.

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1           2.     The exciter assembly of claim 1 wherein the primary winding is disposed  
2     external to the rotatable enclosure and the secondary winding is disposed within the rotatable  
3     enclosure.

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1           3.     The exciter assembly of claim 1 wherein the primary winding is in the form of  
2     a stationary disk and the secondary winding is in the form of a rotatable disk axially spaced  
3     from the stationary disk to form a gap therebetween, the wall of the rotatable enclosure  
4     disposed within the gap.

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1           4.     The exciter assembly of claim 3 wherein at least one of the stationary disk and  
2     the rotatable disk is formed of radial laminations.

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1           5.     The exciter assembly of claim 4 wherein the intermediate core is formed of  
2     radial laminations.

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1           6.     The exciter assembly of claim 3 wherein the stationary disk and the rotatable  
2     disk are each formed of core segments, each core segment on each of the stationary disk and  
3     rotational disk disposed in a radial direction and angularly spaced from another core segment  
4     of the stationary disk and rotational disk, respectively.

1           7.     The exciter assembly of claim 6 wherein the intermediate core is formed of  
2 core segments, each core segment on the intermediate core disposed in a radial direction and  
3 angularly spaced from another core segment of the intermediate core.

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1           8.     A rotatable enclosure surrounding a housing having an internal volume for  
2 supporting cryogenically-cooled components, the rotatable enclosure comprising a wall  
3 including a flux window formed of a high permeability material, the flux window positioned  
4 between a primary of a transformer disposed external to the rotatable enclosure and a  
5 secondary of the transformer disposed within the rotatable enclosure.

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